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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
08/978,634	11/25/1997	ELAZAR RABBANI	ENZ-53(DIV-2)	4640
28171	7590	06/01/2007		
ENZO BIOCHEM, INC. 527 MADISON AVENUE (9TH FLOOR) NEW YORK, NY 10022			EXAMINER SHIN, DANA H	
			ART UNIT	PAPER NUMBER
			1635	
			MAIL DATE	DELIVERY MODE
			06/01/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<p align="center"><b>Office Action Summary</b></p>	<p>Application No.</p> <p align="center">08/978,634</p>	<p>Applicant(s)</p> <p align="center">RABBANI ET AL.</p>	
	<p>Examiner</p> <p align="center">Dana Shin</p>	<p>Art Unit</p> <p align="center">1635</p>	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 January 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 275 and 283-295 is/are pending in the application.
- 4a) Of the above claim(s) 284-294 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 275, 283 and 295 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 21, 2006 has been entered.

### ***Election/Restrictions***

Applicant's election with traverse of claims 275 and 283-288 pertinent to a receptor binding protein and a polynucleotide in the reply filed on January 22, 2007 is acknowledged. The traversal is on the ground(s) that it would not involve an undue burden to search three species of antibody, a cellular matrix protein, and a receptor binding protein. Contrary to applicant's assertion, a proper and thorough search of distinct and independent proteins and molecules would impose a serious search burden on the examiner because the field of search is not co-extensive.

The requirement is still deemed proper and is therefore made FINAL.

### ***Status of Claims***

Claims 1-274 and 276-282 have been cancelled. Claims 291-295 are newly added. Claims 275 and 283-295 are now pending. The restriction requirement mailed to applicant on

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December 20, 2006, expressly set forth a single protein election requirement on pages 2-3, such that “applicants are further required to elect a single protein from an antibody, a lymphokine, a cytokine, a hormone, a cellular matrix protein, a receptor binding protein, and a growth factor....An election of a single protein and an election of a single binding matrix will trigger an election of readable claims among claims 284-288.” See page 2. Moreover, it was clearly noted that this protein election requirement was not a species election requirement. See page 2. Per applicant’s express election of “receptor binding protein”, inventions of antibody, a cellular matrix protein, a lymphokine, a cytokine, a growth factor, polypeptide, and polysaccharide are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to nonelected inventions, there being no allowable generic or linking claim.

Accordingly, claims 284-294 are withdrawn from further consideration, and claims 275, 283, and 295 are currently under examination on the merits.

### ***Claim Objections***

Claim 275 is objected to for containing non-elected subject matter: antibody, cellular matrix, polysaccharide, and polypeptide. Appropriate correction is required.

Claim 295 is objected to because of the following informalities: the alignment of lines in claim 295 triggers a question whether some claim language is missing in the claim. Consistent alignment of lines is required.

***Claim Rejections - 35 USC § 112, first paragraph***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 275, 283 and 295 are also rejected under 35 U.S.C. 112, first paragraph.

Specifically, since the claimed invention is not supported by either a specific utility or a well-established utility for the reasons set forth above on page 4 herein, one skilled in the art clearly would not know how to use the claimed invention.

Claims 275, 283, and 295 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. This is a new matter rejection.

The claims are drawn to a multimeric composition comprising a receptor binding protein. There is no disclosure of the claimed subject matter "receptor binding protein" in the specification. Although the specification discloses the term "ligand binding receptor", it is completely silent about the claimed "receptor binding protein", and there is no indication in the specification that the term "ligand binding protein" is synonymous or interchangeable with the term "receptor binding protein". Further, nowhere in the specification is it described that the first element comprises a receptor binding protein. Accordingly, the claims introduce new matter that was not described in the specification at the time the application was filed.

***Claim Rejections - 35 USC § 112, second paragraph***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 275 and 283 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 275 recites the limitations "wherein said first element" in lines 2-3 "said second element is" in line 5, "wherein said monomeric units" in line 7 . There is insufficient antecedent basis for these limitations in the claim.

Claim 283 recites the limitation "wherein more than one protein of the first element of said monomeric unit" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim because claim 275 does not recite "more than one protein of the first element" ; rather, claim 275 expressly recites "wherein said first element is a protein", indicating that the first element comprises only one protein, not more than one.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 275 and 283 are rejected under 35 U.S.C. 102(b) as being anticipated by Engelhardt et al. (US 5,288,609).

The claims are drawn to a multimeric composition comprising a receptor protein and a polynucleotide wherein the protein and the polynucleotide are attached to a binding matrix via noncovalent bonding, wherein the binding matrix is polynucleotide.

Engelhardt et al. teach a polynucleotide complexed with a receptor protein, wherein the complexed particle is attached to a matrix. They teach that the polynucleotide can be covalently or noncovalently attached to the particle through a moiety, preferably polynucleotides, wherein the particle is a binding matrix such as glass, a polymeric material, or biological cells. They also teach that essentially any receptor can be utilized to complex the polynucleotide with the particle (columns 5-6). Accordingly, all the claim limitations are taught by Engelhardt et al.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 275, 283, and 295 are rejected under 35 U.S.C. 103(a) as being unpatentable over Engelhardt et al. (US 5,288,609) as applied to the §102 rejection above, further in view of Takeda et al. (*PNAS*, 1992, 89:8180-8184).

The claims are drawn to a multimeric composition comprising a receptor protein and a polynucleotide wherein the protein and the polynucleotide are attached to a binding matrix via hydrogen bonding, wherein the binding matrix is polynucleotide.

Engelhardt et al. teach a polynucleotide complexed with a receptor protein, wherein the complexed particle is attached to a matrix. They teach that the polynucleotide can be covalently or noncovalently attached to the particle through a moiety, preferably polynucleotides, wherein the particle is a binding matrix such as glass, a polymeric material, or biological cells. They also teach that essentially any receptor can be utilized to complex the polynucleotide with the particle, wherein the receptor includes a hormone (columns 5-6). Engelhardt et al. do not teach that the protein and polynucleotide are attached to the matrix via hydrogen bonding.

Takeda et al. teach that protein-DNA complex interaction is mediated primarily by hydrogen bonding, which contributes to the stability of the protein-DNA complex (page 8180).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the hydrogen bonding of Takeda et al. into the complex of protein and polynucleotide of Engelhardt et al.

One of ordinary skill in the art would have been motivated to attach or complex the receptor protein and the polynucleotide of Engelhardt et al. by means of hydrogen bonding of Takeda et al., because Takeda et al. clearly teach that hydrogen bonds are formed between amino acids and DNA bases and that the hydrogen bonds contribute to the stability of the DNA-protein



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complex (page 8180), thereby achieving a more stable multimeric composition comprising a receptor protein-polynucleotide complex attached to a polynucleotide matrix, as claimed in the instant case. Since a means to improve stability of DNA-protein complex was known in the art as taught by Takeda et al., and since the multimeric composition comprising a receptor protein and a polynucleotide attached to a binding matrix was available in the art as taught by Engelhardt et al., the skilled artisan would have had a reasonable expectation of success in combining the teachings of the prior art. Accordingly, the instantly claimed invention taken as a whole would have been *prima facie* obvious at the time of filing.

### ***Conclusion***

No claim is allowed.

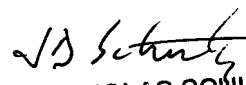
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dana Shin whose telephone number is 571-272-8008. The examiner can normally be reached on Monday through Friday, from 8am-4:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Douglas Schultz can be reached on 571-272-0763. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Dana Shin  
Examiner  
Art Unit 1635

  
J. DOUGLAS SCHULTZ, PH.D.  
SUPERVISORY PATENT EXAMINER